



Boil Water Advisories During Hurricanes and Other Natural Disasters

A Guide for Small Waterworks

Emergency Planning Tools for Waterworks

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COMMONWEALTH of VIRGINIA

Department of Health
OFFICE OF DRINKING WATER

Dear Waterworks Owner,

A crucial component of preparing for and responding to a natural disaster is communication.

Imagine a major storm has crossed Virginia. Severed power lines have disabled well pumps. Uprooted trees have broken water mains. Flooded streams have submerged well heads. In these situations, your water customers will need to be informed that their tap water may be unsafe to drink, and that they should boil all of the tap water they drink until repairs can be made and water tests can be performed.

Unfortunately, the hurricane that causes flooding, or the ice storm that brings down power lines, can also damage and interrupt communications services. As a drinking water provider, you need to be prepared to inform your customers to boil their drinking water, even when normal means of communication have been disrupted.

The Virginia Department of Health Office of Drinking Water has assembled this guide to help you get these vital messages to your customers when a natural disaster strikes. I encourage you to study the guide carefully, and keep it in a place you can readily access in the event of a natural disaster. Keep on hand a supply of the various forms you will need to quickly communicate with your customers. Visit the Office of Drinking Water web site at

www.vdh.virginia.gov/dw/inf_ww_owners.asp

to download copies of communication tools that you can customize for your waterworks.

I hope you find these resources useful as you work with us to provide safe drinking water to Virginia's citizens.

Sincerely yours,
J. Wesley Kleene, Ph.D., P.E.
Director, Office of Drinking Water

Boil Water Advisories During Hurricanes and Other Natural Disasters

A Guide for Small Waterworks

Table of Contents

What should I do to get ready?	Page 1
Under what circumstances is a boil water notice to consumers necessary?	Page 1
Am I <i>required</i> to advise customers to boil water in the event of a natural disaster?	Page 2
Do I need to inform ODW before I give a boil water notice to my customers?	Page 2
What should the notice say?	Page 3
Who should get the notice?	Page 3
How soon should I notify customers?	Page 4
What methods should I use to notify consumers?	Page 4
When can my customers resume using tap water without boiling?	Page 4
How do I let customers know it is safe to use the water again?	Page 5
Should I keep ODW informed of progress?	Page 5
 Appendix 1 - Natural Disaster Communication Planning Checklist	 Page 6
Appendix 2 - ODW Emergency Contact Phone Numbers	Page 7
Appendix 3 - Model Boil Water Notices	Page 8
Generic Boil Water Notice	Page 9
Generic Do Not Use Notice	Page 10
Boil Water Notices Brochure	Page 11
Customizable Boil Water Notice	Page 13
Drinking Water Problem Corrected	Page 14
Appendix 4 - Well Disinfection Procedures	Page 15
Appendix 5 - Situation Report	Page 17

Prepared by the Virginia Department of Health Office of Drinking Water, June 2006.
Send comments or questions to ODWReview@vdh.virginia.gov, Attn: Small Systems Coordinator

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Boil Water Advisories During Hurricanes and Other Natural Disasters

A Guide for Small Waterworks

Severe weather has been forecast, and I may need to notify customers of problems with the water supply. What should I do to get ready?

Because of the reliability of modern weather forecasting, hurricanes no longer strike without warning. Other natural disasters, such as winter ice storms or flooding from rapidly developing summer storms, can damage waterworks with little warning. You should have a plan to communicate quickly with customers in the event that water quality is impaired. A communication planning checklist is provided in Appendix 1. To get ready, review the checklist and follow its recommendations.

Under what circumstances is a boil water notice to consumers necessary?

If damage occurs that could allow microbial contaminants to enter the water supply, boiling water is the preferred method to make sure tap water is safe to drink. Customers should be warned to boil all of the tap water they use for drinking, beverage and food preparation, making ice, or brushing teeth.

There are three main reasons for asking customers to boil their tap water in the immediate aftermath of a natural disaster:

1. **Power outages** During extended power outages your waterworks may be unable to produce water, leading to a loss of pressure throughout the system. In the hours before a hurricane strike, customers may have depleted stored water by filling bathtubs or bottles, further reducing overall system pressure. When pressure drops it is possible for microbes in the ground and soil to contaminate the water supply by seeping into pipes that are normally filled with water under pressure.
2. **Service line breaks** Service lines can be severed when trees are uprooted, or when heavy rainfall causes washouts around buried service lines. Line breaks can lead to sudden loss of pressure, backsiphonage, or direct introduction of microbial contaminants into the water distribution system.
3. **Flooding** Microbial contaminants can be introduced into the water supply if a wellhead, treatment unit, or storage tank becomes flooded. Wellhead contamination can occur if flood waters reach the well casing, even if the casing itself is not submerged.

Even without direct evidence of contamination from bacteriological testing, customers should be advised to boil their tap water if any of these situations occurs in the aftermath of a flood or storm. Boiling tap water will reduce the possibility of getting sick from waterborne microbial pathogens.

During the recovery period after a natural disaster, your waterworks will likely be asked to perform additional bacteriological tests. If the tests show the presence of *E. coli* or fecal coliform bacteria, your waterworks may be required to distribute (or redistribute) boil water notices to customers. Customers should continue to boil tap water until tests show that the water is free of microbial contaminants, and is safe to drink.



Hurricane damage in Colonial Beach. Winds from Hurricane Isabel in 2003 downed trees, cut power lines, and severed water distribution pipe throughout Virginia.

Am I *required* to advise customers to boil water in the event of a natural disaster?

You do not need to notify customers to boil their water unless the waterworks has sustained damage that could let contaminants enter the water supply. Such damage includes extended power outages leading to loss of system pressure, service line breaks, or flooding.

However, in some situations public water supplies are **required** to provide boil water notices to their customers. Section 12VAC5-590-540 of the Virginia *Waterworks Regulations* states that waterworks are required to perform public notification during the “occurrence of a waterborne disease outbreak or other waterborne emergency, such as a failure or significant interruption in key water treatment processes, a natural disaster that disrupts the water supply or distribution system, or a chemical spill or unexpected loading of possible pathogens into the source water that significantly increases the potential for drinking water contamination.” In addition, the *Code of Virginia* gives the State Health Commissioner the authority to issue emergency orders if there is imminent danger to public health.

If your waterworks is subject to mandatory public notification requirements, Office of Drinking Water (ODW) staff will make every effort to contact you, and to provide you with complete guidance and information about your obligations during the emergency.

This guide stresses the actions that public water supply owners should take in situations where there is known contamination or a high probability or suspicion of contamination, and communication with ODW is not possible. If your waterworks has sustained a prolonged power outage leading to loss of water pressure, service line breaks, or flooding of the well, treatment units, or storage tanks, you should proceed with customer notification, even if you are unable to immediately confirm with ODW that a boil water advisory is mandatory.

How ODW Decides When a Boil Water Notice is Mandatory

ODW uses very conservative criteria to determine if a boil water notice is required in the aftermath of a hurricane or other natural disaster. The entire water supply is generally considered to be contaminated until the following determinations can be made:

1. Was the well flooded? This includes water reaching or fully submerging the well casing.
2. Did the water system lose pressure or go empty at any time?
3. Did line breaks leading to possible backsiphonage or cross contamination occur in the system or a portion of the system?
4. Did the water get cloudy or discolored at any time?

If the answer to all four questions is “No”, the system is probably safe, unless there are other circumstances that indicate a risk.

If the answer to any question (1, 2, 3, or 4) is “Yes,” the system is assumed to be contaminated, and a boil water notice is required. This assumption is warranted because of the risks of exposure to disease-causing microorganisms that may have been introduced into the water supply, even without direct evidence from water testing.

In these cases the waterworks should plan to collect bacteriological samples. Water supply disinfection may also be required. The boil water notice can be rescinded when bacteriological tests show that the water is safe to drink.

Do I need to inform ODW before I give a boil water notice to my customers?

It is always best to consult your ODW Field Office before alerting customers to boil their drinking water. In fact, there are several situations described in the Virginia *Waterworks Regulations* where such consultation is mandatory. To receive guidance on notifying your customers during normal weekday business hours you should call your ODW Field Office (see Appendix 2 for contact information). In the event of an emergency after normal business hours, on weekends, and on holidays, ODW has established toll-free emergency contact numbers to allow you to speak to ODW staff. The toll-free numbers are (800) 608-3212, or (800) 204-3527.

However, following a severe weather event there may be widespread interruptions of power and communications, making it impossible to consult ODW first. If so, you should act independently to inform customers of the need to boil their tap water.

Then, as soon as possible after advising customers to boil their water, you should notify your ODW Field Office. Be prepared to provide the Field Office with a copy of the notice that was distributed to your customers. Field Office personnel will advise you on appropriate follow-up actions, including emergency disinfection, water quality testing, and guidelines for informing customers once the situation has been resolved. You may also be asked to provide written certification of how and when customers were notified to boil their water.

What should the notice say?

Boil water notices should ideally be designed to conform to Public Notification Rule guidelines. The notice should include

- the name of the waterworks,
- the geographical or service area affected,
- a brief statement of the problem,
- the date of its occurrence,
- actions being taken by the waterworks to correct the problem,
- measures to be taken by consumers to protect their health,
- a statement indicating how and when the notice will be lifted, and
- a telephone number directing consumer questions to a waterworks representative.

To meet Public Notification Rule requirements, the notice must include mandatory health effects language if there has been confirmed contamination with fecal coliform or *E. coli* bacteria. Complete notices also include a statement asking customers to pass the information along to others in the community. The Customizable Boil Water Notice form in Appendix 3 is designed to meet all of these criteria.



Contractors work to repair a power line that was taken down by a tree in Northern Virginia after a summer storm.

A one-size-fits-all notice may not meet the needs of your waterworks, especially in an emergency. You have considerable discretion to provide additional information in the notice. However, your notice should emphasize the desired consumer behavior, rather than complex, highly technical explanations of the problem, which may best be covered in subsequent or follow-up notices.

Appendix 3 provides several model notices, along with instructions for their use. Spanish language versions of these notices are available by download at the ODW website, or from ODW Field Offices upon request. You should familiarize yourself with all of the model notices in this handbook.

During a power outage it may not be possible to customize or print copies of a boil water notice that meets all of the Public Notification requirements. Keep a supply of the Generic Boil Water Notice and the Virginia Department of Health Boil Water Notices Brochure on hand to quickly distribute to customers. A customized notice can then be prepared and distributed to customers once power has been restored.

Who should get the notice?

You should make a reasonable effort to reach every person served by your waterworks.

How soon should I notify customers?

You should notify customers as soon as possible, but within 24 hours after you become aware of conditions that have the potential to introduce microbial contaminants into the water supply, or within 24 hours of receiving test results that confirm that contamination has occurred. If you are unable to distribute a written notice directly within 24 hours because conditions are unsafe, choose a delivery method that does not endanger you. Follow up with a written notice to customers as soon as it is safe to do so.

What methods should I use to notify consumers?

You should choose the most direct method or combination of methods likely to reach every person served by your waterworks.

If your waterworks serves a small community, subdivision, or mobile home park, the best method will be to hand deliver a notice to each household. However, you should not attempt to hand deliver notices as long as travel conditions are dangerous, or if there is danger of electrical shock due to downed power lines. Notices should be hand delivered to each household as soon as it is safe to do so.

Keep rolls of masking tape on hand to use when hand delivering notices. If customers have evacuated their homes, tape copies of the notice to their doors to ensure that they receive the notice upon return.

If you are unable to make copies of a customized notice for your waterworks, and it is safe to go door to door, deliver copies of the Generic Boil Water Notice and the Virginia Department of Health Boil Water Notices Brochure (Appendix 3). Make copies each year in advance of hurricane season, and keep them on hand for emergency use. Follow-up with a boil water notice specific for your waterworks for delivery to each household once you are able to make copies.

Using Broadcast Media to Notify Customers

If the community served by your waterworks is too large to quickly and effectively reach with a written notice it may be necessary to deliver notices using local radio or television stations. Reverse 911 calling may also be available in your city or county.

Contact the local radio and television stations that serve your area in advance of hurricane season to find out how to use their services to reach your customers. Contact your local police or sheriffs' department to find out if Reverse 911 calling is available in your area, and any requirements for its use.

If you are relying on broadcast media using radio, television, or Reverse-911 to reach your customers, it is still important to make sure that the message includes all of the points covered in a printed boil water notice.

If it is not safe to hand deliver a written notice and telephone service is still available in the community, the notice information can be delivered by a telephone call to each household. Make sure to provide all of the information that would normally appear in a customized written notice. Distribute a written notice as soon as it is safe to do so.

When can my customers resume using tap water without boiling?

During the recovery period after a natural disaster it is important to contact the ODW Field office for specific guidance. In particular, the ODW Field Office will work with you to coordinate any special sampling needed.

If the waterworks was flooded, or if there is an indication or suspicion that contaminated water entered the well, storage tanks, or the distribution system, the boil water notice must stay in effect until the ODW Field Office concurs that the water is safe to drink. Sources that have been flooded or otherwise contaminated will require disinfection. Disinfection guidelines are provided in Appendix 4. If flooding has occurred, bacteriological testing at each well, each tank, and at each entry point to the distribution system is also

typically required after disinfection. In addition, bacteriological testing in the distribution system will be required before customers can be advised to resume normal use of their tap water.

If the water system lost water pressure due to an extended power outage or excessive demand, distribution system bacteriological testing will be required before the boil water notice can be lifted. If these tests are positive, disinfection is typically required. Customers should continue to boil tap water used for consumption until bacteriological tests show that the water is safe to drink.

How do I let customers know it is safe to use the water again?

Your ODW Field Office will advise you when to lift or rescind the boil water notice. After receiving concurrence from ODW, use the Drinking Water Problem Corrected form found in Appendix 3 to notify your customers that tests have shown that the water is safe to drink without boiling, and that the situation has been resolved. This notice should include a description of any follow-up actions that customers should follow, such as flushing plumbing fixtures prior to using the tap water without boiling.

Should I keep ODW informed of progress?

As long as the situation persists, and customers are still asked to boil their water, you should make daily progress reports to the ODW Field Office. If you have access to a fax machine, use the SitRep (Situation Report) Form in Appendix 5, and fax your updates to the Field Office. If the Field Office is closed due to damage during the storm, fax the SitRep to (804) 864-7521.

If you do not have access to a fax machine, you should call the Field Office with progress updates daily. Use the SitRep form to gather the information that you will discuss during your daily call.



Flooding from Hurricane Floyd in 1999 left parts of the City of Franklin under as much as six feet of water.

Flooding and Chemical Contamination

In addition to contamination from harmful microorganisms, flooding can also create the risk of chemical contamination of wells. Flood conditions that overturn home heating oil tanks or cover cars can introduce volatile organic contaminants if a nearby well is also submerged. Other harmful chemicals can be transported by floodwater from industrial or manufacturing areas if flooding is severe.

If you suspect that your well has been affected by flood borne chemicals, your customers should be advised not to use tap water for any purpose, until the contamination can be investigated and the water tested to make sure it is safe. Boiling water may not remove the chemicals, and in some cases can even make the water more unsafe by concentrating the chemical contaminants.

Consult your ODW Field office for guidance in this situation. If it is not possible to consult ODW first, distribute a Generic Do Not Use notice to your customers (Appendix 3), following the same guidelines as you would for distributing a boil water notice.

Appendix 1
Natural Disaster Communication Planning Checklist

Pre-event Planning

Throughout the year...	<ul style="list-style-type: none"> • Keep copies of the <u>Generic Boil Water Notice</u>, the <u>Generic Do Not Use Notice</u>, and the <u>Virginia Department of Health Boil Water Notices Brochure</u> on hand at all times • Provide copies of <u>Virginia Department of Health Boil Water Notices Brochure</u> to new customers or billing units at the time service begins • Distribute copies of the <u>Virginia Department of Health Boil Water Notices Brochure</u> as an enclosure with annual Water Quality Reports (also known as Consumer Confidence Reports) • Keep phone and contact records for your customers up-to-date • Contact local television and radio stations to learn how to utilize their services to provide information to your customers during emergencies • Contact your local police or sheriff's department to find out if Reverse-911 calling is available in your area, and any special requirements for its use. • Keep a supply of masking tape on hand to tape copies of notices on the doors of customers who may have evacuated their homes during a natural disaster
Throughout hurricane season (June 1 through November 30, annually)...	<ul style="list-style-type: none"> • Monitor hurricane activity reported by local television and radio. Keep abreast of approaching storms by visiting the National Hurricane Center website at www.nhc.noaa.gov
Three days prior to a predicted hurricane strike...	<ul style="list-style-type: none"> • Monitor water production and storage closely. Stored water can quickly become depleted as customers fill bathtubs or containers.

After the Storm

Immediately after the natural disaster...	<ul style="list-style-type: none"> • Assess your waterworks for damage as soon as it is safe for you to do so. • If the storm has caused damage that could let contaminants enter the water supply, including power outages leading to loss of system pressure, service line breaks, or flooding, contact the ODW Field Office for guidance on issuing a boil water advisory to your customers. • If the waterworks has sustained damage, and it is not possible to contact the ODW Field Office because of interrupted telephone service, proceed with customer notification as soon as it is safe for you to do so, following the guidelines in this handbook. Contact the ODW Field Office as soon as possible after phone service has been restored.
In the days following the natural disaster....	<ul style="list-style-type: none"> • If the waterworks has sustained damage you should provide daily updates to the ODW Field Office regarding the status of waterworks repair or recovery efforts. • If you have access to a fax machine, use the SitRep form to provide your daily updates to the ODW Field Office, or use the form to gather information to discuss during your daily phone call to ODW staff. • Follow the guidelines provided by your ODW Field Office for disinfecting the well and collecting requested water quality samples. • If you distributed a generic notice to your customers, follow up with additional notices specific to your situation as soon as you are able to do so.
When you are sure the water is again safe to use or drink...	<ul style="list-style-type: none"> • When the ODW Field Office agrees that the situation has been resolved, distribute a copy of the <u>Drinking Water Problem Corrected Notice</u> to your customers.

Appendix 2
ODW Emergency Contact Phone Numbers

<p>Virginia Department of Health Office of Drinking Water Emergency Call Numbers</p> <p>Use after normal business hours: nights, weekends, holidays. Call is routed to a pager. Enter your return call number and hang up. A Virginia Department of Health staff person will return your call immediately and transmit your needs to staff at the appropriate ODW Field Office</p>	<p>(800) 608-3212 or (800) 204-3527</p> <p>Both numbers are toll free</p>
Abingdon Field Office	(276) 676-5650
Lexington Field Office	(540) 463-7136
Southeast Virginia Field Office (Norfolk)	(757) 683-2000
East Central Field Office	(804) 674-2880
Danville Field Office	(434) 836-8416
Culpeper Field Office	(540) 829-7340
<p>Use the spaces below to record other emergency contact numbers, such as the electrical utility, the local police or sheriff's department, local radio or television stations, etc.</p>	

Appendix 3 Model Boil Water Notices

The following pages include model notices for your use when advising customers to boil their tap water during an emergency. All are available for download in English and Spanish from the ODW website at www.vdh.virginia.gov/dw/inf_ww_owners.asp, or from ODW Field Offices upon request.

Generic Boil Water Notice and **Generic Do Not Use Notice** – Used to quickly provide a warning to customers when it is not possible to make copies of a customized, detailed notice because of power outages. Print a supply of these forms and always keep them on hand. These forms are also available in a Spanish language version.

Virginia Department of Health Boil Water Notices Brochure – Provides supplemental information on the proper procedures for boiling tap water, written in a question-and-answer format. The document is designed for two-sided printing, to be folded as a brochure. Always keep a supply of these brochures on hand. The brochure can be delivered to customers each year at the start of hurricane season, or as an enclosure with annual Water Quality Reports (also known as Consumer Confidence Reports). Copies can be given to new customers or new billing units when water service begins. Copies of the brochure should also be distributed to customers along with a boil water notice during an emergency. This form is also available in a Spanish language version.

Customizable Boil Water Notice – This form is available in two formats: as an electronic format for completion on a computer using Microsoft Word, and as the lined form for completion by hand provided here. The electronic version includes prompts for completing the required information. Electronic copies can be downloaded at the ODW website and saved to your computer. After customizing the notice, make copies to distribute to each household by hand delivery. This form is designed to meet all of the requirements of the Public Notification Rule. This form is also available in a Spanish language version.

Drinking Water Problem Corrected Notice – This form - for customization on the computer or by hand - is used to advise customers that the situation has been resolved, and that it is no longer necessary to boil tap water. The form is also available in a Spanish language version. If there are special instructions that customers should follow, such as flushing lines before resuming normal water use, they should be described in the space provided on the form.

BOIL YOUR TAP WATER

Failure to follow this advisory could result in stomach or intestinal illness.

DO NOT DRINK TAP WATER WITHOUT BOILING IT FIRST

Boiled or bottled water should be used for drinking, beverage and food preparation, and making ice **until further notice**. Boiling kills bacteria and other organisms in the water. Boiling is the preferred method to assure that the tap water is safe to drink. Bring all tap water to a rolling boil, **let it boil for one minute**, and let it cool before using, or use bottled water.

If you cannot boil your tap water....

- An alternative method of purification for residents that do not have gas or electricity available is to use liquid household bleach to disinfect water. The bleach product should be recently purchased, free of additives and scents, and should contain a hypochlorite solution of at least 5.25%. Public health officials recommend adding 8 drops of bleach (about ¼ teaspoon) to each gallon of water. The water should be stirred and allowed to stand for at least 30 minutes before use.
- Water purification tablets may also be used by following the manufacturer's instructions.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly

DO NOT USE TAP WATER

Failure to follow this advisory could result in illness.

DO NOT USE YOUR TAP WATER - USE ONLY BOTTLED WATER.

During the recent storm, unknown chemical substances may have contaminated our drinking water. Until we can investigate further and have the water tested, avoid all contact with the tap water. Only bottled water should be used for all drinking, beverage and food preparation (including baby formula and juice), making ice, brushing teeth, washing dishes or clothes, washing hands, and bathing until further notice.

DO NOT TRY TO TREAT THE WATER YOURSELF

Boiling, freezing, filtering, adding chlorine or other disinfectants, or letting the water stand will not make the water safe.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly

Can I haul water from my neighbor's well or spring for drinking purposes?

No. You should only use water from an approved, tested source. Without routinely testing the water there is no way to know if the water is safe to drink.

Should I boil the tap water I give to my animals or pets?

You can boil the tap water you give to the animals in your care. Your veterinarian can tell you if this precaution is necessary.

What should I do if I become sick?

See your family physician or healthcare provider. Your doctor may call the Virginia Department of Health Office of Drinking Water at (804) 864 7500 for information about the boil water notice. Your doctor should notify the local health department if he or she suspects your illness was caused by microorganisms in the water.

Some people may be more vulnerable to contaminants. People with weakened immune systems, such as people with cancer undergoing chemotherapy, organ transplant patients, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be at greater risk from infections. These people should seek advice about drinking water from their health care providers. Guidelines on ways to reduce the risk of infection from microbiological contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.

How will I know when it is safe to drink my tap water?

You will be notified when tests show that the tap water is safe to drink. You may be asked to run water to flush the pipes in your home before using your tap water or be given other special instructions. Until you are notified, continue to boil all tap water for one minute before use.

If you cannot boil your tap water because of a power outage....

In an emergency, boiling is the preferred method for making sure tap water is safe to drink. The following are acceptable alternatives if you cannot boil your tap water because of a power outage or loss of gas service:

- Use bottled water.
- Use liquid household bleach to disinfect tap water. The bleach product should be recently purchased, free of additives and scents, and should contain a hypochlorite solution of at least 5.25%. If the water is clear, add 8 drops of bleach (about ¼ teaspoon) to each gallon of water. Add twice the amount of bleach (16 drops, or ½ teaspoon) to each gallon if the water is cloudy. After adding bleach, the water should be stirred and allowed to stand for at least 30 minutes before use.
- Water purification tablets may also be used to disinfect tap water by following the manufacturer's instructions.

Prepared by VDH Office of Drinking Water
June 2006

For additional information write to:
VDH Office of Drinking Water
Director of Technical Services
109 Governor Street, 6th Floor
Richmond, Virginia 23219



BOIL WATER NOTICES



Answers to frequently asked questions

Why was I advised to boil my tap water?

You may be asked to boil your tap water during an emergency

- if tests show that harmful microorganisms could be present in the water,
- if the water pressure drops due to equipment failure or power outages,
- because of water main breaks or repairs,
- if the water source has been flooded, or
- during other situations that warrant special action to protect consumers' health.

How does boiling make my tap water safe?

Boiling the water kills microorganisms such as bacteria, viruses, or protozoans that can cause disease. Boiling makes the tap water microbiologically safe.

How long should I boil the water?

Bring tap water to a full rolling boil, let it boil for one minute, and let it cool before using.

Important Safety Tips



When boiling water on the stovetop, use manageable-sized containers and do not overflow them. Place the container on a rear burner if there are small children in the house. Let the water cool before transferring to another container.

Can I boil water in the microwave?

Tap water can be boiled in the microwave in a microwave-safe container, provided that the water reaches a full rolling boil for one minute. Place a microwave-safe utensil in the container to keep the water from superheating (heating above the boiling point without forming steam or bubbles).



Do I have to boil the tap water used to make beverages?

Yes. Boil all of the tap water you use for making coffee, tea, mixed drinks, Kool-Aid or any beverage made with water. In addition, all tap water used for making ice for consumption must be boiled.

Should I boil the tap water used to make baby formula?

Yes. Only use boiled tap water or bottled water for mixing formula for your baby.

Do I need to boil water before using it to wash vegetables that will be eaten raw?

Yes. Boil all of the tap water you use for washing raw vegetables.

Should I boil the tap water used in cooking?

All tap water used in cooking must first be boiled for one minute, unless the cooking process involves boiling for one minute or more.

Do I have to boil my dish-washing water?

No. Adding a tablespoon of household bleach such as Clorox to a sink full of tap water should be sufficient to treat the water used for washing dishes. Bleach should also be added to the water used for rinsing dishes. Allow dishes and utensils to air dry before reuse.

You may wash dishes in an electric dishwasher, but be sure to use it with its heating elements turned on. After washing in an electric dishwasher, dishes should be rinsed in water with a tablespoon of bleach added, and allowed to air dry before reuse.

Should I boil tap water for brushing my teeth?

Yes. Any tap water that might be swallowed should be boiled before use.

Is it necessary to boil water to be used for hand washing? Is any special soap necessary?

No. It is not necessary to boil the tap water used for washing hands, and no special soaps are necessary.

What about my bath water?

There is no need to boil water for bathing or showering. Adults, teens, and older children, can shower or bathe, though they should avoid getting water in the mouth or swallowing the water. Infants and toddlers should be sponge bathed. No special soaps are necessary.

Care should be taken to prevent water from getting into deep open or post-surgical wounds. Consult your physician or health care provider for wound care instructions.

Do I need to use boiled water for washing clothes or flushing the toilet?

No.



Do I still have to boil tap water if I have a water treatment device?

Yes. Devices designed to improve the taste, odor, or chemical quality of the water, such as activated carbon filters, will not remove harmful microorganisms from the tap water. Boil the tap water to make sure it is safe.

Can I use bottled water instead of boiling tap water?

Yes. Bottled water can be used for all of the situations where boiled tap water is recommended in this brochure. Be sure that the bottled water is from a reliable source.

Notice to Customers of _____ Waterworks

Este informe contiene información muy importante sobre su agua potable.

Tradúzcalo o hable con alguien que lo entienda bien.

BOIL YOUR TAP WATER

Failure to follow this advisory could result in stomach or intestinal illness.

The _____ Water System is advising residents to use boiled tap water or bottled water for drinking and cooking purposes as a safety precaution. This precaution is necessary because _____

DO NOT DRINK TAP WATER WITHOUT BOILING IT FIRST

Boiled or bottled water should be used for drinking, beverage and food preparation, and making ice **until further notice**. Boiling kills bacteria and other organisms in the water. Boiling is the preferred method to assure that the tap water is safe to drink. Bring all tap water to a rolling boil, **let it boil for one (1) minute**, and let it cool before using, or use bottled water.

If you cannot boil your tap water....

- An alternative method of purification for residents that do not have gas or electricity available is to use liquid household bleach to disinfect water. The bleach product should be recently purchased, free of additives and scents, and should contain a hypochlorite solution of at least 5.25%. Public health officials recommend adding 8 drops of bleach (about ¼ teaspoon) to each gallon of water. The water should be stirred and allowed to stand for at least 30 minutes before use.
- Water purification tablets may also be used by following the manufacturer's instructions.
- Potable water is available at the following locations: _____

We will inform you when you no longer need to boil your water. To address this problem we are _____. We anticipate resolving the problem within _____.

For more information call:

Waterworks contact: _____

Name

Address

Phone

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

Date: _____

DRINKING WATER PROBLEM CORRECTED

Customers of _____ were notified on _____ of a problem with our drinking water, and were advised to _____. We are pleased to report that the problem has been corrected and that it is no longer necessary to _____. We apologize for any inconvenience and thank you for your patience.

As always, you may contact _____ at _____ (phone) or _____ (address) with any comments or questions.

Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

This notice is being sent to you by _____

Date _____

WELL DISINFECTION PROCEDURES FOR SMALL WATERWORKS

The following disinfection procedure should be adequate to properly disinfect wells that have become contaminated by microbiological organisms. Care should be taken in using this procedure due to the high concentration of chlorine that is used. If this procedure does not eliminate the microbiological contamination after two attempts, a licensed water well contractor should be contacted for assistance in disinfecting the well.

Step 1. Pump water out of the well until the water is clear and free of sediments.

Step 2. Using the table on the following page, calculate the amount of bleach granules or liquid bleach to mix with water to make 5 gallons of chlorine solution. The liquid bleach should be recently purchased, and free of additives and scents. To determine the exact amount of granules or liquid bleach, find the corresponding well diameter in the left column. Then match the amount of bleach needed for the amount of time the solution will remain in the well. Multiply the amount of bleach needed by every 10 feet of water in the well.

EXAMPLE: To disinfect a well in eight hours, using a chlorine concentration of 50 parts per million (ppm), an 8 inch diameter well will require $3\frac{1}{2}$ fluid ounces of unscented bleach for each 10 feet of water in the well. If the water in the well is 30 feet deep, multiply $3\frac{1}{2}$ fluid ounces by 3 to determine the amount of bleach required ($3\frac{1}{2} \times 3 = 10.5$ fluid ounces). Add this total amount of bleach to about 5 gallons of water.

Step 3. Pour the chlorine solution in the well in a circular pattern to ensure contact with all sides of the casing or lining of the well. If possible, recirculate the water by connecting a garden hose to an outside faucet and place the other end in the well. Allow water to run for approximately 15 minutes to ensure the chlorine solution is mixed in the well.

Step 4. For wells connected to a plumbing system, open all inside and outside faucets and pump water until you notice a strong odor of chlorine at each faucet. If you do not smell chlorine after running all faucets for 15 minutes, increase the amount of chlorine by one-half of the original amount used and repeat the procedures.

Stop the pump and allow the chlorine solution to remain in the well and plumbing system. It is preferable for the solution to remain in the well for 8 hours or overnight, if possible. Do not leave chlorine in wells more than 24 hours because it may affect some pump parts.

Step 5. After the chlorine solution has remained in the well for the recommended period, turn on the pump, attach a hose to an outside faucet, and direct the water to a designated area away from the well. The water in the well contains high concentrations of chlorine that can be harmful to plants, septic tanks, and streams. Empty the water in an area where plants or streams will not be harmed. Continue running the water until the chlorine odor disappears, then drain the remainder of bleach in the plumbing system from the inside faucets. Water from wells with no plumbing system can simply be pumped until the chlorine odor disappears.

After the disinfection procedure is complete, bacteriological samples should be collected and analyzed as directed by the ODW Field Office.

Amount of Chlorine Needed For Each 10-foot Depth of Water in Well						
Inside Diameter of Well Casing	Amount of 5.25% Sodium Hypochlorite (use recently purchased liquid bleach, free of additives and scents)			Amount of 65% Calcium Hypochlorite (chlorine granules)		
	Disinfection time for concentration of disinfectant					
	100 ppm for 2 hours	50 ppm for 8 hours	25 ppm for 24 hours	100 ppm for 2 hours	50 ppm for 8 hours	25 ppm for 24 hours
2 inches	½ fluid ounce	¼ fluid ounce	⅛ fluid ounce	Not practical to use chlorine granules for these small-diameter well casings		
3 inches	1 fluid ounces	½ fluid ounce	¼ fluid ounce			
4 inches	1½ fluid ounces	¾ fluid ounce	⅜ fluid ounce			
6 inches	4 fluid ounces	2 fluid ounces	1 fluid ounce	¼ ounce	⅛ ounce	1/16 ounce
8 inches	7 fluid ounces	3½ fluid ounces	1¾ fluid ounces	½ ounce	¼ ounce	⅛ ounce
10 inches	10 fluid ounces	5 fluid ounces	2 fluid ounces	¾ ounce	⅜ ounce	3/16 ounce
12 inches	2 cups	1 cup	½ cup	1 ounce	½ ounce	¼ ounce
18 inches	4½ cups	2¼ cups	1⅛ cups	2½ ounces	1¼ ounces	¾ ounce
2 feet	7½ cups	3¾ cups	1⅞ cups	4½ ounces	2¼ ounces	1⅞ ounces
3 feet	17½ cups	8¾ cups	4⅜ cups	10 ounces	5 ounces	2 ½ ounces
1 heaping tablespoon of 65% chlorine powder = ½ ounce 8 fluid ounces of liquid bleach = 1 cup. ppm = parts per million or mg/L						

Appendix 5
Situation Report

Situation Report (SitRep) Form

1. Waterworks Name			
2. PWSID			
3. Report by			
4. Phone / Cell / Pager			
5. Date / Time			
Briefly describe the situation at your waterworks as of today.			
6. Does the waterworks have electrical service?	<input type="checkbox"/> No <input type="checkbox"/> Yes		
7. When was power lost (if known)?	Date: _____ Time: _____		
8. If power was lost, has the power utility provided an indication of when power will be restored? Provide their estimate, if known.	Date: _____ Time: _____		
9. Does the system have emergency generators?	<input type="checkbox"/> No <input type="checkbox"/> Yes		
10. If the system is running on emergency generators, how long do you estimate your current fuel supply can sustain operations?	Hours: _____ Days: _____		
11. Is the waterworks experiencing reduced system pressure?	<input type="checkbox"/> No <input type="checkbox"/> Entire system affected <input type="checkbox"/> Only part of system affected Describe _____		
12. What amount of stored water is available?	Volume available (gallons) _____ and/or Days available _____		
13. Has the waterworks experienced any line breaks? Estimate the extent of damage, if known.	<input type="checkbox"/> No <input type="checkbox"/> Yes Describe _____		
14. Has the waterworks experienced any flooding? Describe the affected features (well, storage, treatment units)	<input type="checkbox"/> No <input type="checkbox"/> Yes Describe _____		
15. Have customers have been advised to boil their tap water?	<input type="checkbox"/> No <input type="checkbox"/> Yes		
16. When was the boil water notice issued?	Date: _____ Time: _____		
17. When was the boil water notice lifted?	Date: _____ Time: _____		
18. Has the water supply been disinfected?	<input type="checkbox"/> No <input type="checkbox"/> Yes		
19. Have bacteriological samples been collected?	<input type="checkbox"/> No <input type="checkbox"/> Yes		
20. Provide bacteriological sample information, including results (if known)	Date Collected	Location	Result
21. Describe assistance needed from ODW	Describe _____		

Fax completed form or phone information to the ODW Field Office serving your waterworks

Phone	FAX	Phone	FAX
Abingdon Field Office..... (276) 676-5650	(276) 676-5659	East Central Field Office..... (804) 674-2882	(804) 674-2815
Lexington Field Office..... (540) 463-7136	(540) 463-3892	Danville Field Office..... (434) 836-8416	(434) 836-8424
Southeast Virginia Field Office..... (757) 683-2000	(757) 683-2007	Culpeper Field Office..... (540) 829-7340	(540) 829 7337

If your ODW Field Office phone/fax service has been interrupted, fax to the ODW Central Office at (804) 864-7521